CLAIMS:

1. An R-Fe-B base sintered magnet of a composition consisting essentially of, in atom percent, 12 to 17% of R which stands for at least two of yttrium and rare earth elements and essentially contains Nd and Pr, 0.1 to 3% of Si, 5 to 5.9% of B, up to 10% of Co, and the balance of Fe, containing a primary phase of $R_2(Fe,(Co),Si)_{14}B$ intermetallic compound, and having a coercive force iHc of at least 10 kOe, characterized in that

the magnet is free of a B-rich phase and contains at least 1% by volume based on the entire magnet of an R-Fe(Co)-Si grain boundary phase consisting essentially of, in atom percent, 25 to 35% of R, 2 to 8% of Si, up to 8% of Co, and the balance of Fe.

2. The sintered magnet of claim 1 which contains an R-rich phase, the volume percent of the R-Fe(Co)-Si grain boundary phase being higher than the volume percent of the R-rich phase.

3. The sintered magnet of claim 1 wherein an R-Si compound phase is absent in the magnet structure.

4. The sintered magnet of claim 1 wherein Dy and/or Tb is contained as part of R, and the coercive force iHc of the magnet is at least (10+5×D) kOe wherein D is the total concentration (atom percent) of Dy and Tb in the magnet.

5. The sintered magnet of claim 1 wherein the magnet is prepared by the steps of sintering and optional heat treatment, and the sintering or the heat treatment involves a cooling step of cooling at a controlled rate of 0.1 to 5°C/min at least in a temperature range from 700°C to 500°C, or a multi-stage cooling step including holding at a constant temperature for at least 30 minutes on the way of cooling

whereby the R-Fe(Co)-Si grain boundary phase is formed in the magnet structure.